Geometry **Name: ___________________**

UNIT 5 AGENDA - SPECIAL RIGHT TRIANGLES

DATE	DAY	LESSON	Pages	HOMEWORK
MON 11/7	5.1	Radical Operations	2 – 5	DeltaMath HW 5.1 due 11/17
TUES 11/8		**ELECTION DAY – NO SCHOOL**	----------	
WED 11/9	5.1.5	Angle Practice Day	----------	
THURS 11/10	5.2	Pythagorean Theorem	6 – 7	
FRI 11/11	5.3	Practice – Radical Operations & Pythagorean Theorem	8 – 9	Finish Practice
MON 11/14	5.4	Special Right Triangles: 30-60-90	10 – 14	
TUES 11/15	5.5	Special Right Triangles: 45-45-90	15 – 17	
WED 11/16	5.6	Putting It All Together – Quiz Review	18 – 22	Quiz Review & DM due Thursday! STUDY!!!
THURS 11/17	5.7	**QUIZ – Radicals, Pythagorean Theorem, & Special Right Triangles**	----------	
FRI 11/18		**Math Inventory**	----------	
THANKSGIVING BREAK				
MON 11/28	5.8	Special Right Triangle Applications	23 – 24	DeltaMath HW 5.2 due 12/1
TUES 11/29	5.9	Practice Activity		
WED 11/30	5.10	Test Review	25 – 28	Test Review & DM due tomorrow! STUDY!!!
THURS 12/1	5.11	**TEST – GOOD LUCK!**	----------	

Agenda is subject to change!!!

Geometry – DAY 5.1 Name ______________________________
Review of Radicals Date ______________

What does it mean to say $\sqrt{4}$? ____

So, in general √x means: ____

Square Root is the ______________ of Squared.

____

Memorize the following square roots. These are the most common!

$\sqrt{1}$ = ______ $\sqrt{4}$ = ______ $\sqrt{9}$ = ______ $\sqrt{16}$ = ______

$\sqrt{25}$ = ______ $\sqrt{36}$ = ______ $\sqrt{49}$ = ______ $\sqrt{64}$ = ______

$\sqrt{81}$ = ______ $\sqrt{100}$ = ______ $\sqrt{121}$ = ______ $\sqrt{144}$ = ______

Simplify each radical expression: Rewrite each radical as a product of two factors (one being the <u>largest</u> perfect square each number is divisible by).

1. $\sqrt{12}$ 2. $\sqrt{72}$ 3. $\sqrt{28}$

When simplifying radicals with a coefficient, remember: "outsides with outsides" and "insides with insides."

1. $3\sqrt{8}$ 2. $10\sqrt{36}$ 3. $-20\sqrt{125}$

Simplify each radical expression with variables.

1. $\sqrt{a^8 b^{11} c}$ 2. $\sqrt{30a^2 b^9}$ 3. $\sqrt{80x^{100}y^{49}}$

Multiplying Radicals. (Remember to simplify completely.) "outsides with outsides" and "insides with insides."

1. $\sqrt{7} \bullet \sqrt{3}$

2. $\sqrt{10} \bullet \sqrt{5}$

3. $-5\sqrt{12}\left(3\sqrt{6}\right)$

4. $-\sqrt{18}\left(-9\sqrt{2}\right)$

5. $\sqrt{a^2 b} \bullet \sqrt{ab^2}$

6. $\sqrt{2a^3} \bullet \sqrt{8a^5 b^2}$

Dividing Radicals. (Remember to simplify completely.)

1. $\frac{\sqrt{30}}{\sqrt{15}}$

2. $\frac{6\sqrt{200}}{\sqrt{20}}$

3. $\frac{\sqrt{40}}{\sqrt{8}}$

IMPORTANT: * When simplifying, never leave a radical in the denominator of a fraction. *

Always ________________________ the denominator.

When the denominator is a monomial, multiply both the numerator and the denominator by whatever makes the denominator an expression that can be simplified so that it is no longer a radical.

Example 1: Simplify $\frac{2}{\sqrt{7}}$

Example 2: Simplify $\frac{10}{\sqrt{6}}$

Sometimes you need to multiply by whatever makes the denominator a perfect square.

Example 3: Simplify $\frac{5}{\sqrt{8}}$

Example 4: Simplify $\frac{2}{\sqrt{18}}$

If the radicand is a fraction, rewrite the numerator and denominator as two separate radicals.

Example 5: Simplify $\sqrt{\frac{1}{5}}$

Example 6: Simplify $\sqrt{\frac{9}{11}}$

Example 7: Simplify $\frac{\sqrt{45}}{\sqrt{5}}$

Example 8: Simplify $\frac{\sqrt{12}}{\sqrt{24}}$

Example 9: Simplify $\frac{\sqrt{21}}{\sqrt{18}}$

Example 10: Simplify $\frac{12}{5\sqrt{6}}$

Dividing Radicals Practice

1. $\frac{8}{\sqrt{5}}$

2. $\frac{10}{3\sqrt{20}}$

3. $\frac{\sqrt{90}}{\sqrt{5}}$

4. $\sqrt{\frac{4}{3}}$

5. $\frac{6}{\sqrt{2}}$

6. $\sqrt{\frac{125}{5}}$

7. $\frac{3\sqrt{6}}{2\sqrt{3}}$

Geometry Name____________________________________

DAY 5.1 Practice - Radicals

Date________________ Period____

Simplify.

1) $\sqrt{150}$

2) $\sqrt{50}$

3) $-8\sqrt{175}$

4) $2\sqrt{72}$

5) $\sqrt{100m}$

6) $5\sqrt{150p^4}$

7) $\sqrt{72x^2y^4}$

8) $-6\sqrt{16x^3y^2}$

9) $\sqrt{6} \cdot \sqrt{15}$

10) $\sqrt{15} \cdot \sqrt{15}$

11) $-3\sqrt{8} \cdot 4\sqrt{6}$

12) $5\sqrt{10} \cdot -3\sqrt{5}$

13) $\dfrac{\sqrt{20}}{\sqrt{4}}$

14) $\dfrac{\sqrt{5}}{\sqrt{9}}$

15) $\dfrac{\sqrt{5}}{\sqrt{80}}$

16) $\dfrac{\sqrt{20}}{\sqrt{64}}$

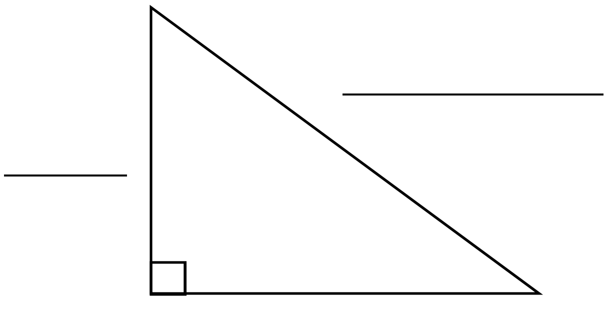
17) $\dfrac{4\sqrt{12}}{2\sqrt{4}}$

18) $\dfrac{2\sqrt{12}}{2\sqrt{25}}$

Geometry – DAY 5.2 **Name:** ______________________________
Pythagorean Theorem **Date:** ____________

PYTHAGOREAN THEOREM

Recall: **Right Triangles**



- The side of the right triangle that is the longest and is always across from the right angle is called the **hypotenuse.**

- The two shorter sides are called the **legs** of the right triangle.

- **Pythagorean Theorem:** ______________________
  where "a" and "b" are legs and "c" is the hypotenuse.

Solve: $x^2 = 9$ $x^2 = 10$

Practice:
Find the missing side. Leave your answer in radical form.

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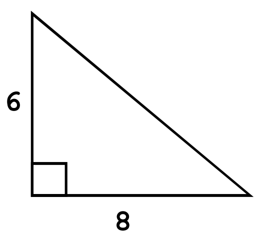

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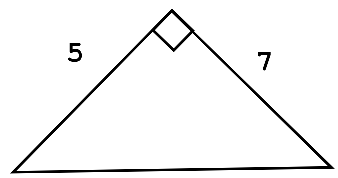

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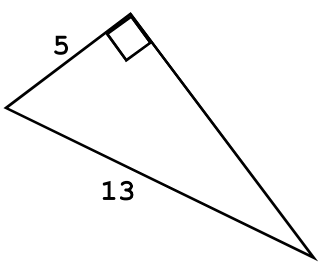

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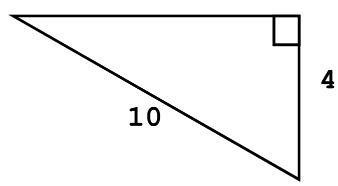

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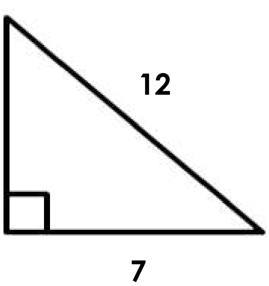

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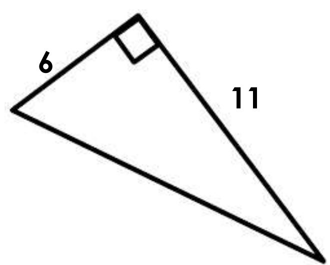


<u>Application-</u> Use the Pythagorean Theorem to solve these real world problems.

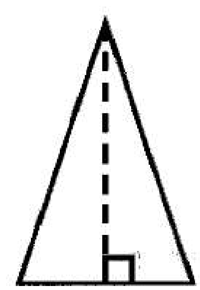
7. If the legs of an isosceles right triangle (2 sides are equal) are 6 units long, find the length of the hypotenuse.

8. A television screen measures approximately 15.5 in. high and 19.5 in. wide. A television is advertised by giving the approximate length of the diagonal of its screen. How should this television be advertised?

9. How far from the base of the house do you need to place a 15 foot ladder so that it exactly reaches the top of a 12 foot wall?

10. What is the length of the diagonal of a 10 cm by 15 cm rectangle?

11. An isosceles triangle has congruent sides of 20 cm. The base is 10 cm. What is the height of the triangle? What is the area of the triangle? A = ½bh



12. Jill's front door is 42 inches wide and 84 inches tall. She purchased a circular table that is 96 inches in diameter. Will the table fit through the front door?

Geometry – DAY 5.3 **Name:** ______________________________

Practice – Radicals & Pythagorean Theorem **Date:** __________

Part 1 – Simplifying Radicals: Simplify each of the following radical expressions.

1. $\sqrt{52} =$
2. $4\sqrt{54} =$
3. $\sqrt{70} =$
4. $-2\sqrt{144} =$
5. $\sqrt{72x^6y^9z} =$
6. $3\sqrt{50x^4} =$
7. $-3\sqrt{28x^5y^3} =$
8. $-7\sqrt{24x^2y^8} =$

Part 2 – Multiplying Radicals: Simplify each of the following radical expressions using multiplication.

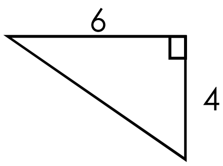
1. $\sqrt{3} \bullet \sqrt{7} =$
2. $\sqrt{6} \bullet \sqrt{6} =$
3. $4\sqrt{2}\left(6\sqrt{11}\right) =$
4. $\sqrt{6} \bullet \sqrt{9} =$
5. $\sqrt{2a^2} \bullet \sqrt{10a^3} =$
6. $2\sqrt{12} \bullet \sqrt{6} =$
7. $5\sqrt{11xy^3}\left(2\sqrt{3x^2y}\right) =$
8. $2\sqrt{12} \bullet 3\sqrt{60} =$

Part 3 – Dividing Radicals: Simplify each of the following radical expressions using division.

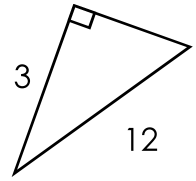
1. $\sqrt{\frac{72}{9}} =$
2. $\sqrt{\frac{60}{15}} =$
3. $\frac{6\sqrt{5}}{3\sqrt{2}} =$
4. $\frac{8}{\sqrt{27}} =$
5. $\frac{2\sqrt{2}}{3\sqrt{3}} =$
6. $\frac{\sqrt{8}}{\sqrt{32}} =$
7. $\sqrt{\frac{20}{45}} =$
8. $\frac{2\sqrt{20}}{7\sqrt{50}} =$

Part 4 – Pythagorean Theorem: Find the missing side. Write your answer in simplest radical form.

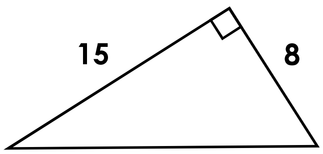
1. ____________



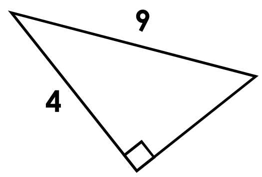
2. ____________



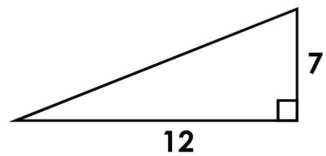
3. ____________



4. ____________



5. ____________



Part 5 – Pythagorean Theorem Applications: Draw a picture for each scenario. Put your answers in simplest radical form.

1. Kevin is standing 2 miles due north of the school. James is standing 4 miles due west of the school. What is the distance between Kevin and James?

2. Two sides of a right triangle are 8 and 12.

A. Find the missing side if these are the lengths of the legs.

B. Find the missing side if these are the length so a leg and hypotenuse.

3. A baseball diamond is a square with sides of 90 feet. What is the shortest distance between first base and third base? Round to one decimal place.

Geometry – DAY 5.4 **Name: ________________________**
Special Right Triangles – 30-60-90 **Date: _____________**

<u>Warm-Up: Radicals</u>

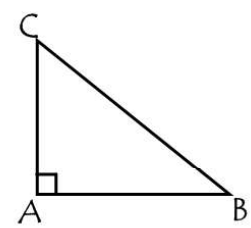
How do you multiply radicals? Leave in radical form unless it is a perfect square!

1. $\sqrt{2} \bullet \sqrt{3}$ 2. $\sqrt{6} \bullet \sqrt{8}$ 3. $7 \bullet 2\sqrt{10}$ 4. $3\sqrt{3} \bullet \sqrt{5}$ 5. $\sqrt{3} \bullet \sqrt{12}$

How do you divide radicals? Leave in radical form unless it is a perfect square! Remember you cannot have a radical in the denominator! ☺

11. $\frac{\sqrt{10}}{\sqrt{5}}$ 12. $\frac{\sqrt{7}}{\sqrt{5}}$ 13. $\frac{\sqrt{6}}{\sqrt{7}}$ 14. $\frac{5}{\sqrt{2}}$ 15. $\frac{9}{\sqrt{3}}$

<u>Right Triangles</u>



The side opposite the right angle is called the ________________________.

Which side is this in ΔABC? __________

The other two sides of a right triangle are called _______________.

Which sides are these in ΔABC? _________________

The legs are often referred to as **<u>opposite sides</u>**.

Which side is opposite $\angle C$ in ΔABC? __________

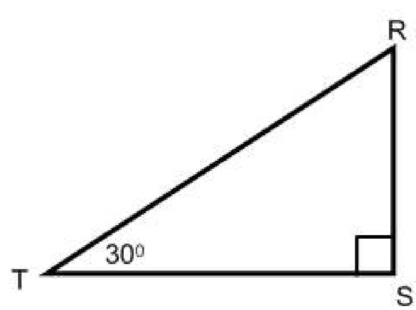
Which side is opposite $\angle B$ in ΔABC? __________

Each of the non-right angles in a right triangle is an acute angle.

What is true about the acute angles of a right triangle? ______________________

Practice with terminology and angle measures…

1. Find the $m\angle R$. ________
2. Name the side opposite $\angle R$. ________
3. Name the side opposite $\angle T$. ________
4. Name the hypotenuse. ________



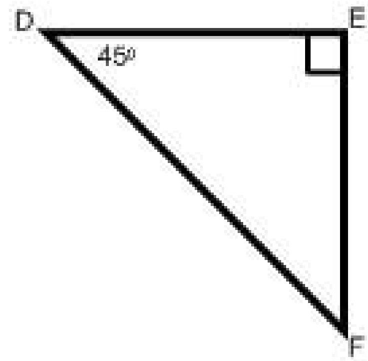
5. Find the $m\angle F$. ________

6. What kind of triangle is ΔDEF? ________

7. Name the side opposite $\angle D$. ________

8. Name the side opposite $\angle F$. ________

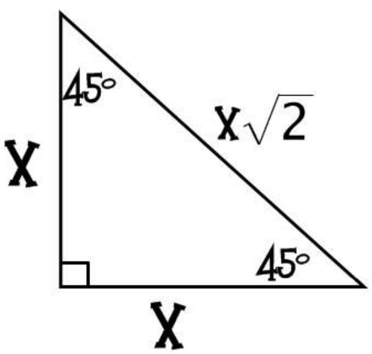
9. Name the hypotenuse. ________



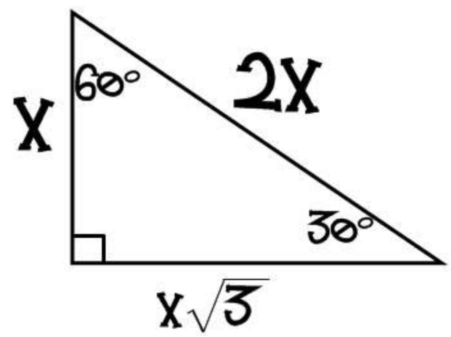
<u>SPECIAL RIGHT TRIANGLES</u>

There are two types of special right triangles: ____________________ & ______________________.

45° – 45° – 90°



30° – 60° – 90°



We are just going to look at just 30 – 60 – 90 today!!

<u>Examples</u>

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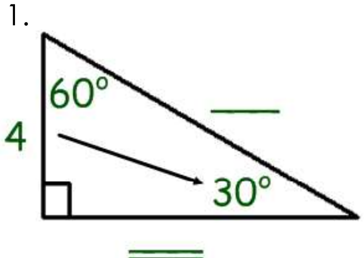

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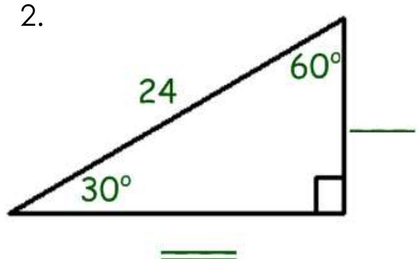

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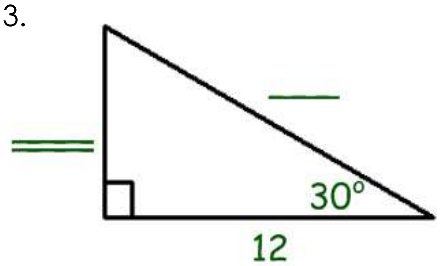

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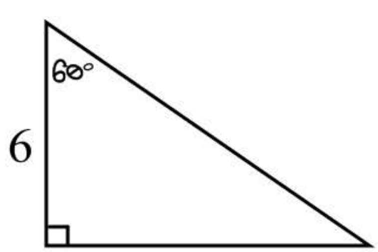

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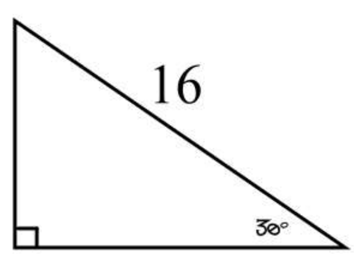

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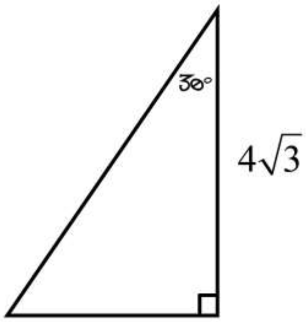

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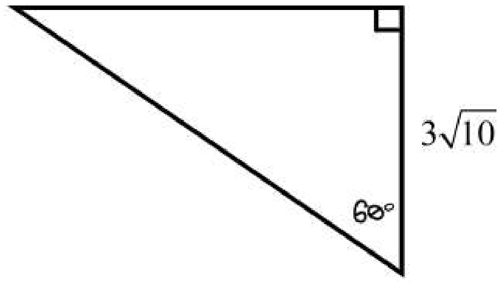

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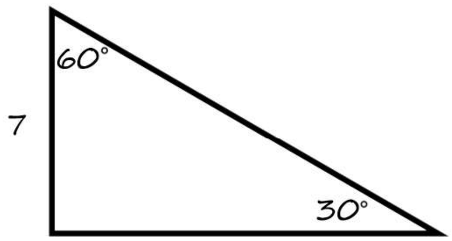

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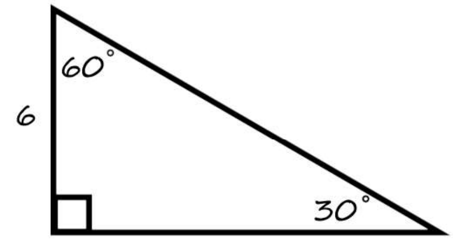

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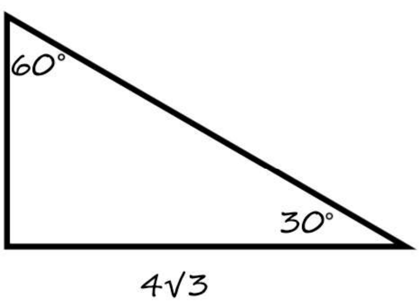

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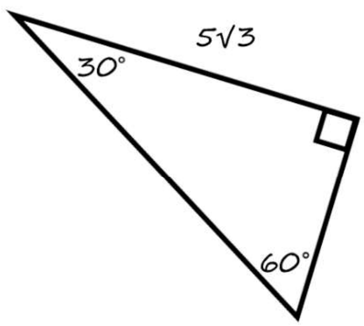

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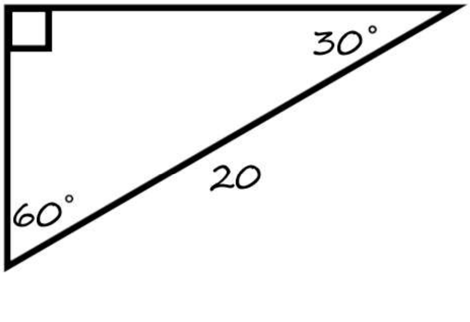

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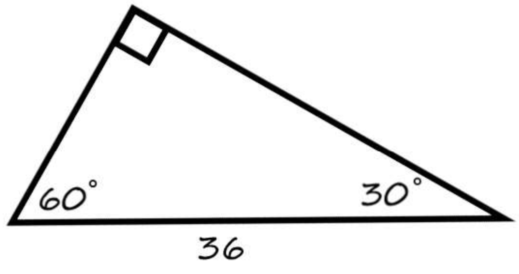
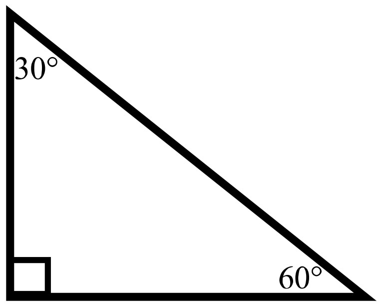


Geometry – DAY 5.4
Extra Practice – 30-60-90 Special Right Triangles

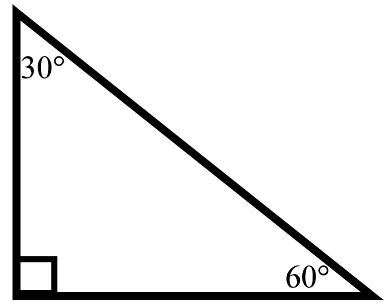
Name: ____________________
Date: ______________

Special Right Triangles: $30^\circ - 60^\circ - 90^\circ$

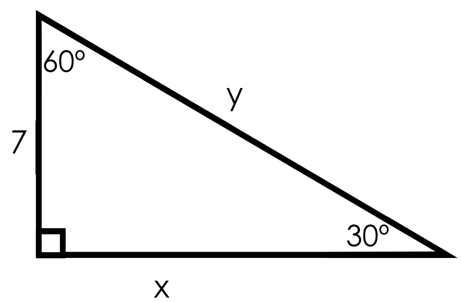
30º, 60º, 90º Triangle Vocabulary



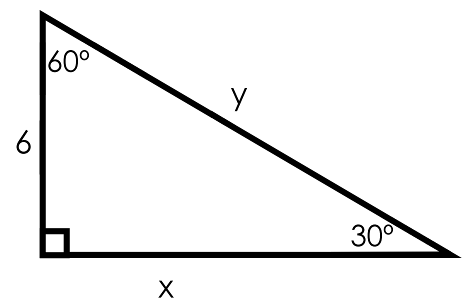
30º, 60º, 90º Triangle Ratio



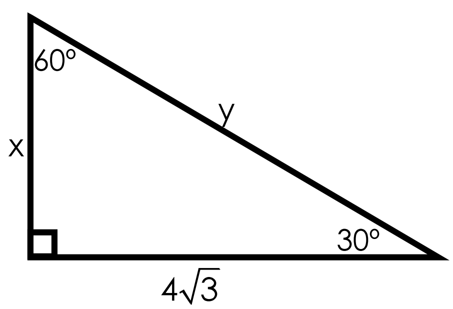
1. x = __________, y = __________



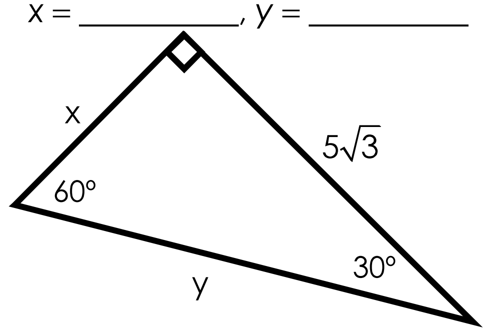
2. x = __________, y = __________



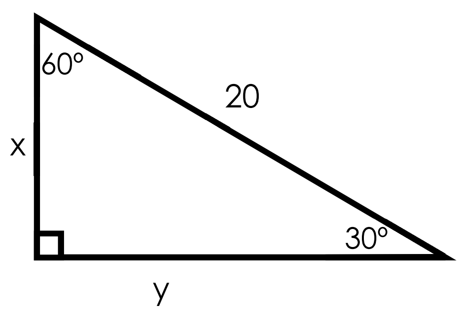
3. x = __________, y = __________



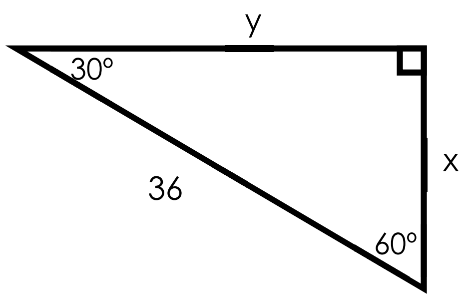
4. x = __________, y = __________



5. x = __________, y = __________



6. x = __________, y = __________



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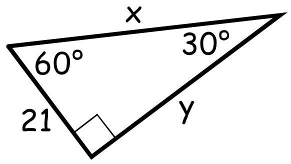

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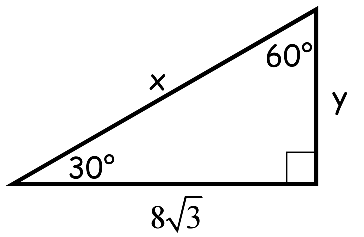

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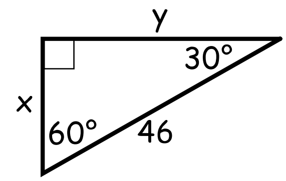
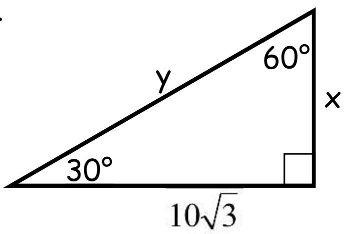


x = _______ y = _______

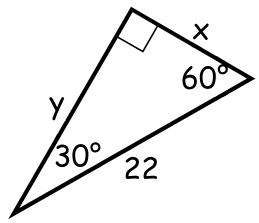
x = _______ y = _______

x = _______ y = _______

4.



5.



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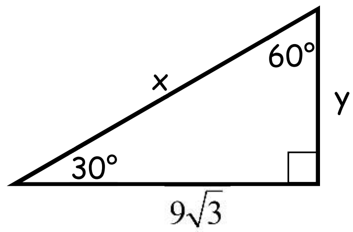
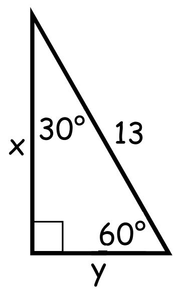


x = _______ y = _______

x = _______ y = _______

x = _______ y = _______

7.



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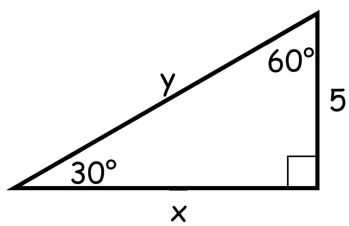

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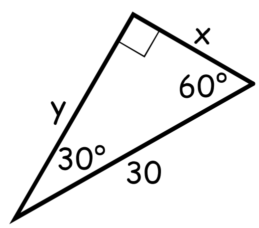
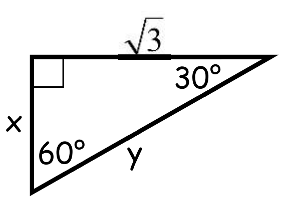


x = _______ y = _______

x = _______ y = _______

x = _______ y = _______

10.



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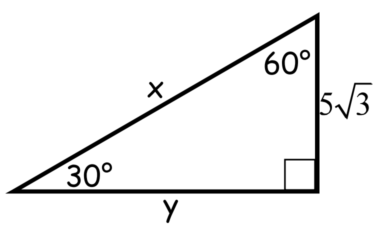

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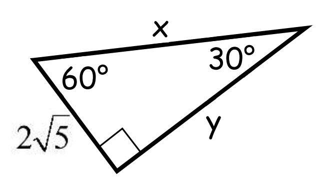


x = _______ y = _______

x = _______ y = _______

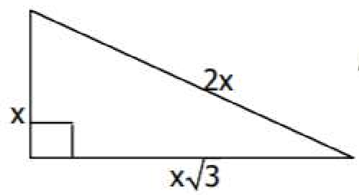
x = _______ y = _______

SPECIAL RIGHT TRIANGLE RULES

30-60-90 Right Triangles

30-60-90

if this measure is given:	*and you want this measure:*	*then do this:*
short leg	hypotenuse	multiply short leg by 2
short leg	long leg	multiply short leg by $\sqrt{3}$
long leg	short leg	divide long leg by $\sqrt{3}$
hypotenuse	short leg	divide hypotenuse by 2



$$short\_leg = \frac{hypotenuse}{2}$$

$$short\_leg = \frac{long\_leg}{\sqrt{3}}$$

$$hypotenuse = 2(short\_leg)$$

$$long\_leg = \sqrt{3}(short\_leg)$$

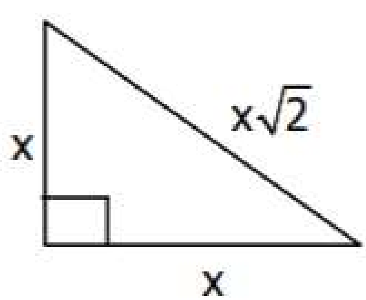
Note: The short leg is always opposite the 30° angle!
It is best to find the measure of the short leg first (that is if it is not given).

45-45-90 Right Triangles

45-45-90

if this measure is given:	*and you want this measure:*	*then do this:*
the leg	hypotenuse	multiply the leg by $\sqrt{2}$
hypotenuse	the leg	divide hypotenuse by $\sqrt{2}$

Note: The legs of a 45-45-90 are the same measure!



$$leg = \frac{hypotenuse}{\sqrt{2}}$$

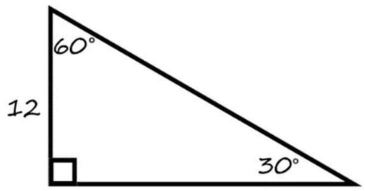
$$hypotenuse = leg\sqrt{2}$$

Geometry – DAY 5.5 Name: ______________________________

Special Right Triangles: 45-45-90 Date: ___________

Warm-Up: Find the missing side lengths using your knowledge of 30-60-90 triangles.

1.



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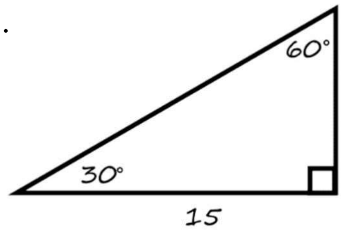
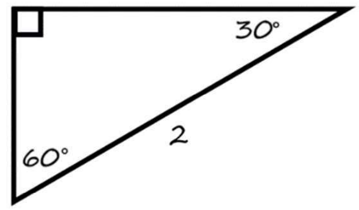
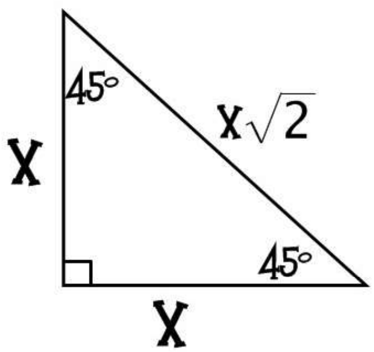


3.

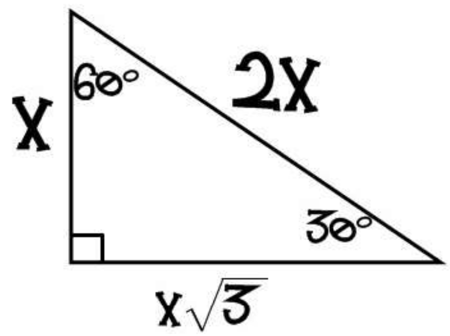


REMINDERS! Today we are focusing on 45-45-90 degree triangles!

45° – 45° – 90°

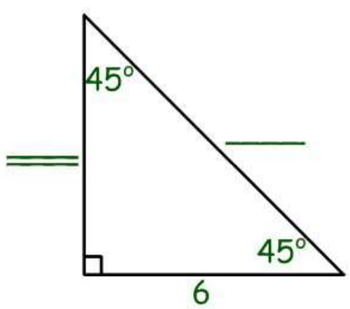


30° – 60° – 90°



Examples

1.



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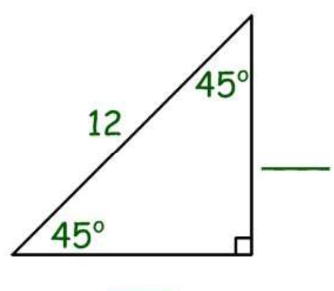

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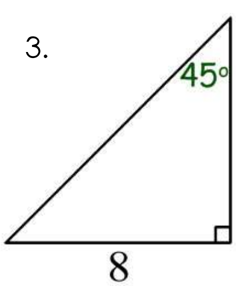

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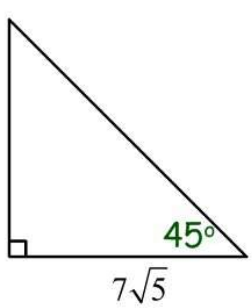

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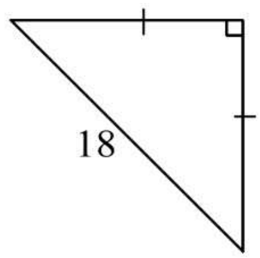

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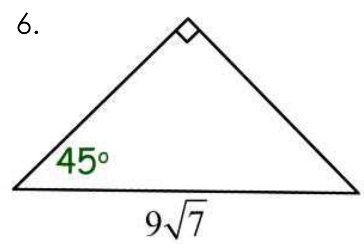

Geometry
Classwork – Special Right Triangles

Name________________________
Date ___________________

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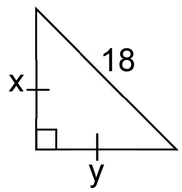

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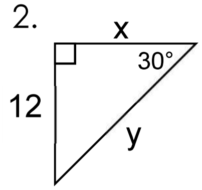

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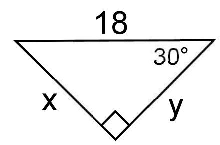

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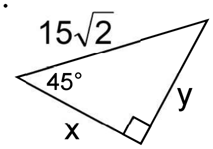

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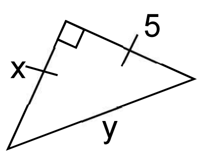

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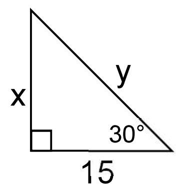

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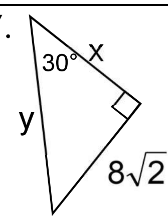

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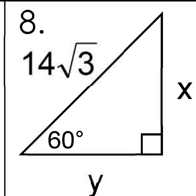

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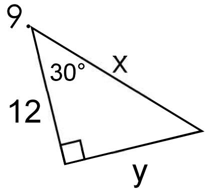

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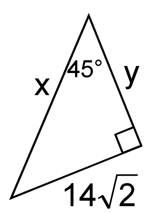

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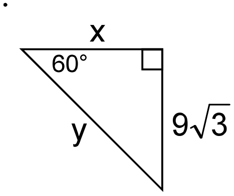

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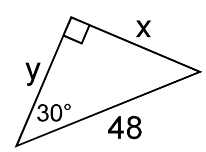

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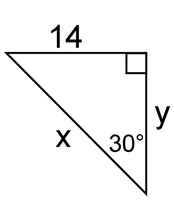

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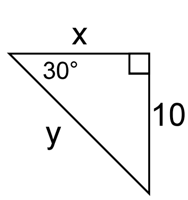
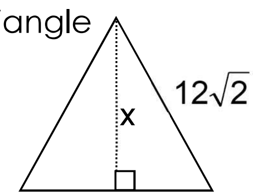


15. Equilateral Triangle


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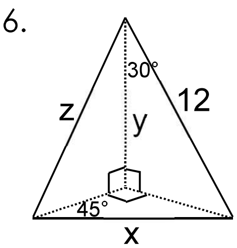
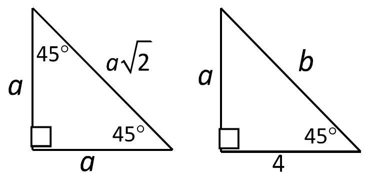


Name: ______________________________ Date: ____________ Hour: _______

DAY 5.6 PRACTICE – Special Right Triangles

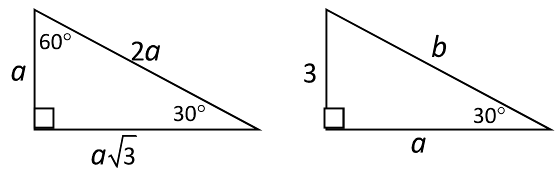
45-45-90 Triangle



$a = 4$

$b = 4\sqrt{2}$

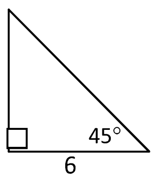
30-60-90 Triangle



$a = 3\sqrt{3}$

$b = 2 \cdot 3 = 6$

Find the missing sides.

1.


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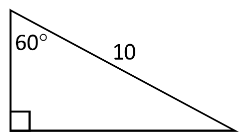

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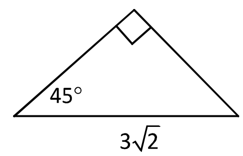
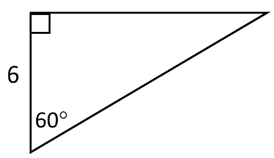


4.


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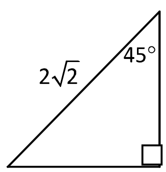

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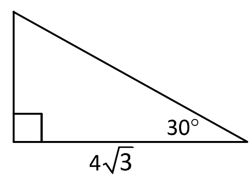

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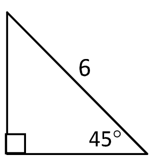

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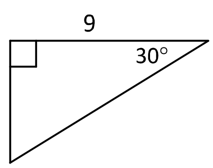

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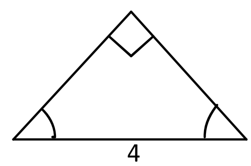

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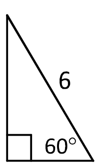

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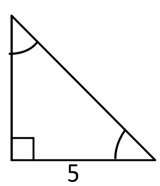

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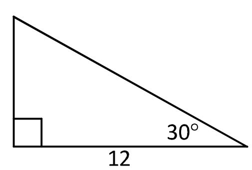


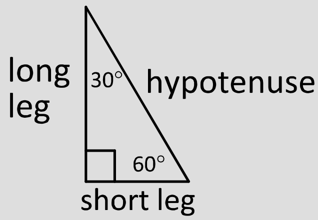
Cross out the correct answers. The remaining letters (one per space) complete the statement.

5 EQ	9 HA	$6\sqrt{2}$ UA	3 LT	10 LF	$3\sqrt{2}$ OT	3 HE	$4\sqrt{3}$ SQ	$3\sqrt{2}$ UA	12 RE	$2\sqrt{2}$ RO
$6\sqrt{3}$ OT	$5\sqrt{3}$ OF	25 TH	$3\sqrt{3}$ ER	$6\sqrt{3}$ AD	5 IU	20 EH	3 SO	$3\sqrt{3}$ FT	36 YP	2 PY
11 OT	4 TH	16 EN	6 AG	8 OR	32 US	$5\sqrt{2}$ AS	2 TH	7 E.	$8\sqrt{3}$ T.	$2\sqrt{2}$ S.

In a 30-60-90 degrees right triangle, the side opposite the 30-degree angle is

___ ___ ___ ___   ___ ___ ___   ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

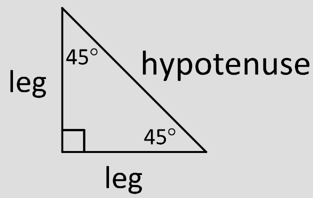
Special Right Triangles



short leg = $\frac{1}{2} \cdot$ hypotenuse

long leg = $\sqrt{3} \cdot$ (short leg)

hypotenuse = $2 \cdot$ (short leg)

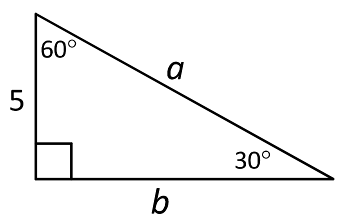


legs are equal

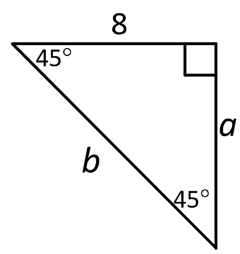
hypotenuse = $\sqrt{2} \cdot$ (leg)

Use the 30-60-90 and 45-45-90 triangle relationships to solve for the missing sides. Use the answers to reveal the name of the team that Abraham M. Saperstein established and sent on the road in 1927.

1



2



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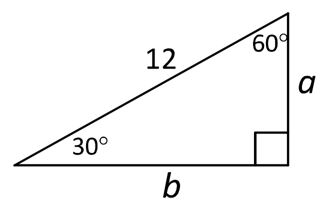

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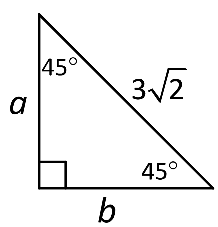

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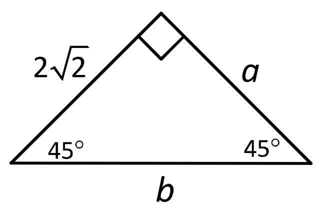

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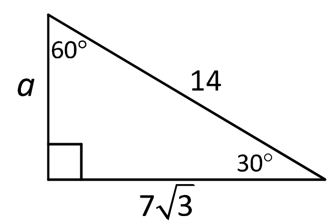

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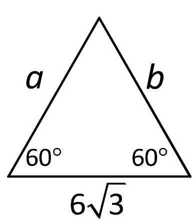

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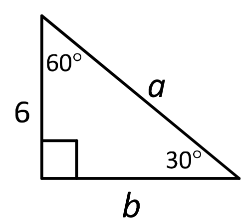
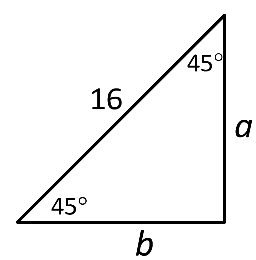


9



8	$2\sqrt{2}$	3	6	$5\sqrt{3}$	4	7	12	$8\sqrt{2}$	10	$6\sqrt{3}$
A	B	E	G	H	L	M	O	R	S	T

___ ___ ___   ___ ___ ___ ___ ___ ___
8b 1b 4a   1b 2a 9b 5b 4b 6a

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
3a 5b 8a 5a 4a 7a 2b 8a 7b 3b 4b 9a 1a

Geometry – DAY 5.6 **Name:** ______________________________

Quiz Review – Radicals, Pyth. Thm., & Special Right Triangles **Date:** ____________

PART I: Radicals

1. $\sqrt{63} =$

2. $-2\sqrt{54} =$

3. $-6\sqrt{121} =$

4. $5\sqrt{220} =$

5. $\sqrt{72x^6y^9z} =$

6. $4\sqrt{180x^9} =$

7. $-3\sqrt{28x^5y^3} =$

8. $-3\sqrt{44x^2y^{11}z} =$

9. $\sqrt{3} \bullet \sqrt{7} =$

10. $2\sqrt{6} \bullet \sqrt{6} =$

11. $4\sqrt{2} \bullet 6\sqrt{11} =$

12. $5\sqrt{12} \bullet \sqrt{8} =$

13. $\sqrt{2a^2} \bullet \sqrt{30a^5} =$

14. $5\sqrt{11xy^3} \bullet 2\sqrt{5x^2y} =$

15. $-2\sqrt{2}\left(3+\sqrt{2}\right) =$

16. $\sqrt{15}\left(5\sqrt{10}+\sqrt{6}\right) =$

17. $\sqrt{\dfrac{180}{5}} =$

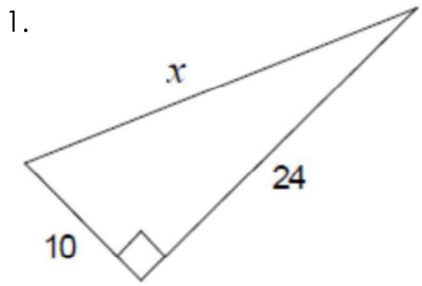
18. $\dfrac{8\sqrt{11}}{16\sqrt{2}} =$

19. $\sqrt{\dfrac{30}{90}} =$

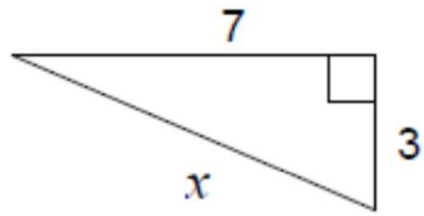
20. $\dfrac{-4\sqrt{5}}{7\sqrt{12}} =$

PART II: Pythagorean Theorem

1.



2.



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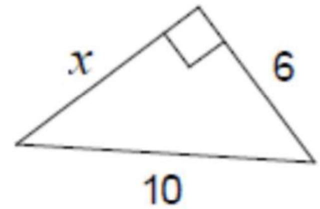

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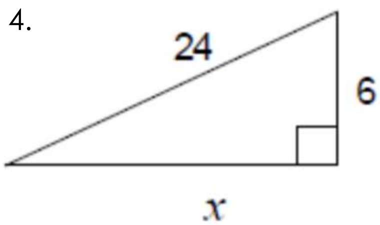

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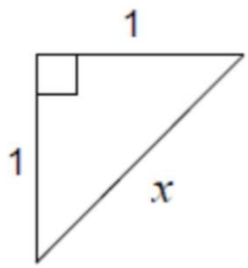
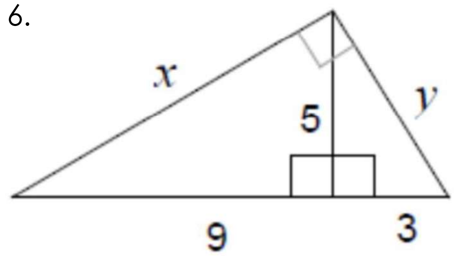


6.



For the following applications, make sure you draw a picture, show your work, and answer the question.

7. Two sides of a right triangle are 4 and 12 in.

   a. Find the missing side if these are the lengths of the legs.

   b. Find the missing side if these are the lengths of a leg and hypotenuse.

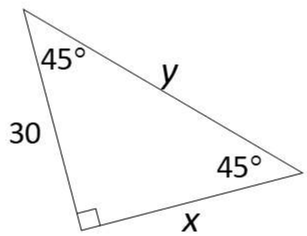
8. The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?

9. John leaves school to go home. He walks 6 blocks North and then 8 blocks west. How far is John from the school?

10. A soccer field is a rectangle 90 meters wide and 120 meters long. The coach asks players to run from one corner to the corner diagonally across. What is this distance?

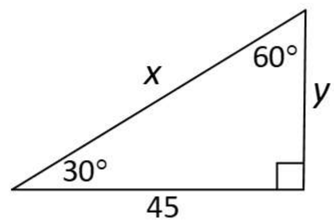
PART III: Find the value of each variable in radical form.

1.



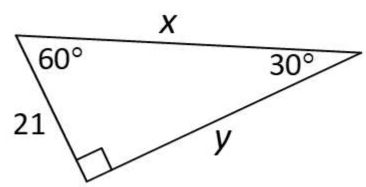
$x =$ ________ $y =$ ________

2.



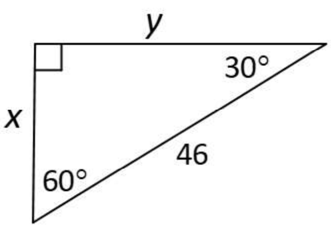
$x =$ ________ $y =$ ________

3.



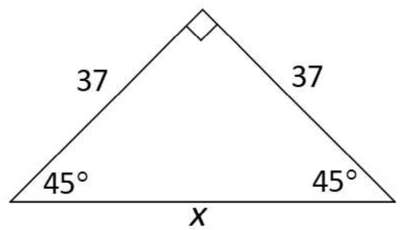
$x =$ ________ $y =$ ________

4.



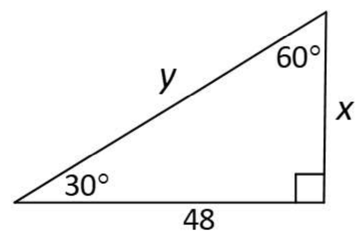
$x =$ ________ $y =$ ________

5.



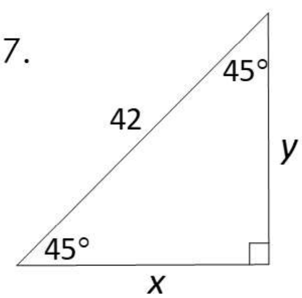
$x =$ ________

6.



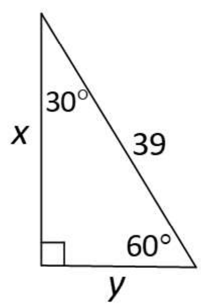
$x =$ ________ $y =$ ________

7.



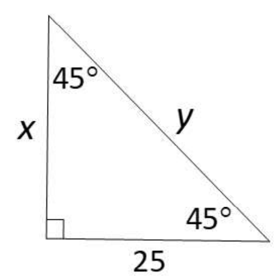
$x =$ ________ $y =$ ________

8.



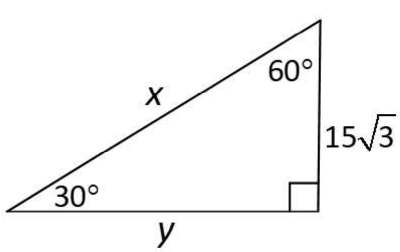
$x =$ ________ $y =$ ________

9.



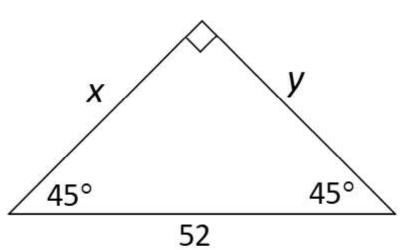
$x =$ ________ $y =$ ________

10.



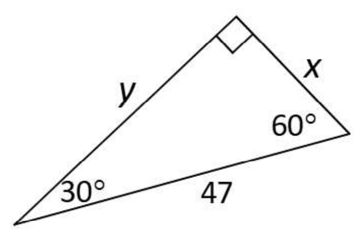
$x =$ ________ $y =$ ________

11.



$x =$ ________ $y =$ ________

12.



$x =$ ________ $y =$ ________

Geometry – DAY 5.8 **Name:** ______________________________
Special Right Triangle Application Problems **Date:** __________________

1. Find the length of a diagonal of a square with sides 10 inches long.

2. One side of an equilateral triangle measures 6 cm. Find the measure of an altitude of the triangle.

3. A tree casts a shadow that is 150 feet long.

   a. If the angle of elevation from the tip of the shadow to the top of the tree is 30 degrees, how tall is the tree to the nearest foot?

   b. If the tree begins to fall and your car is parked 90 feet away from the tree, would you have to move your car?

4. A triangle has the following characteristics: a 90 degree angle and side lengths both measuring $14\sqrt{6}$ inches. Find the length of the hypotenuse.

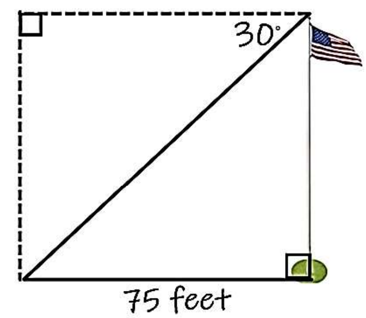
5. What is the side length of a square that has a diagonal length of 12 inches?

6. What is the perimeter of an equilateral triangle that has a height of 18 cm?

7. The baseball diamond is in the shape of a square with each side being 90 feet. If the catcher throws out a runner at second base who was trying to steal, how far does he need to throw the ball?

8. A bookcase is 3 feet high and 3 feet wide. Two braces are going to be built to diagonally cross the back of the case. How long is the piece of wood that is needed to build each brace?

9. The angle of depression from the top of a flag pole to a point on the ground is 30 degrees. If the point on the ground is 75 feet from the base of the flag pole, how tall is the pole to the nearest foot?



10. The shorter leg of a 30-60-90 triangle is 7.4 meters long. Find the perimeter.

11. If a diagonal of the square is $8\sqrt{3}$, what is the length of each side?

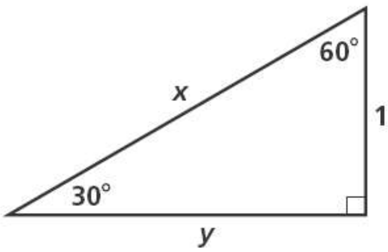
12. Find the altitude of an equilateral triangle, if each side of the triangle has a length of 14 meters.

Geometry – DAY 5.10 Name: ______________________
Test Review – Special Right Triangles Date: __________________

I. Special Right Triangles

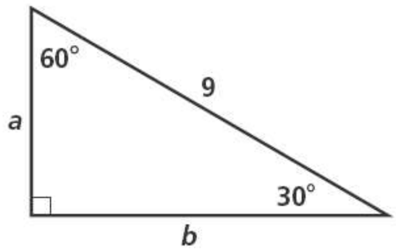
Find the value of each variable. Leave your answers in simplest radical form.

1.



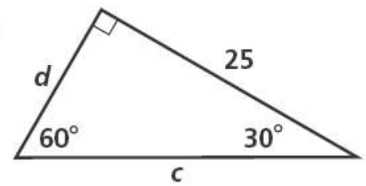
x = __________ ***y*** = __________

2.



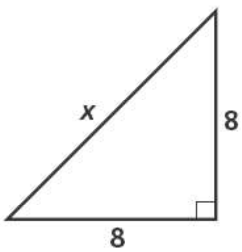
a = __________ ***b*** = __________

3.



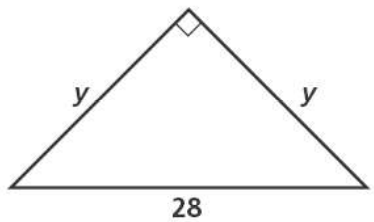
c = __________ ***d*** = __________

4.



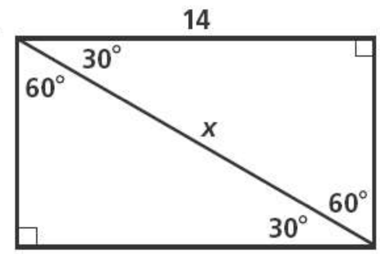
x = __________

5.



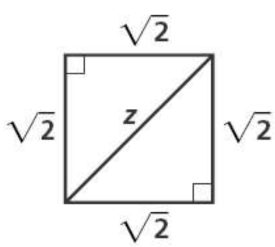
y = __________

6.



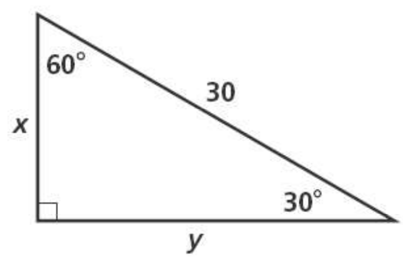
x = __________

7.



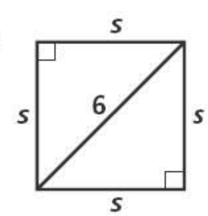
z = __________

8.



x = __________ ***y*** = __________

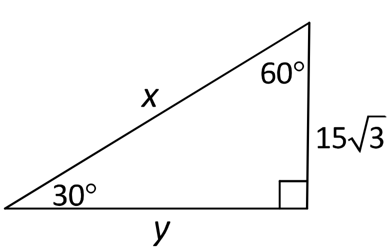
9.



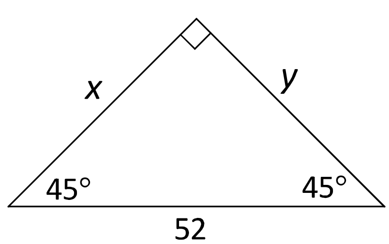
s = __________

x = ________ y = __________ x = ________ x = ________ y = __________

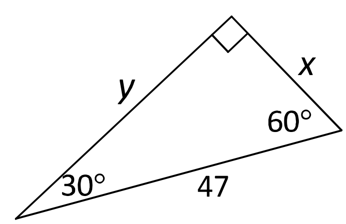
10.



11.



12.



x = ________ y = __________ x = ________ y = __________ x = ________ y = __________

13. Using the ratio for a 45-45-90 triangle, fill in the table.

LEG	**LEG**	**HYPOTENUSE**
10		
		$4\sqrt{3}$
		$\sqrt{15}$
	$\sqrt{3}$	
		6

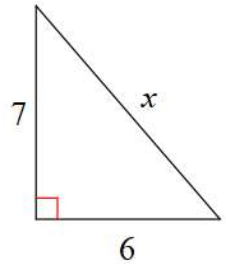
14. Using the ratio for a 30-60-90 triangle, fill in the table.

SHORT LEG	**LONG LEG**	**HYPOTENUSE**
31		
		$6\sqrt{5}$
$\sqrt{6}$		
	16	
	$10\sqrt{12}$	

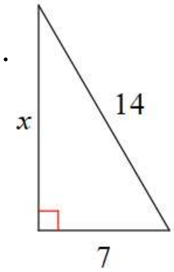
II. Pythagorean Theorem

Put your answers in simplest radical form!

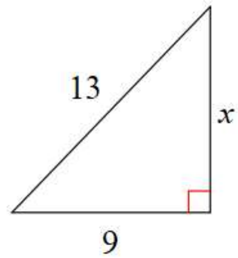
1.



2.



3.



III. Pythagorean Theorem and Special Right Triangle Word Problems

1. A ladder is leaning against the side of a house at a 60 degree angle. If the base of the ladder is 7 meters away from the house, how tall is the ladder?

2. An equilateral triangle sides are 20 inches and angles are 60 degrees. What is the length of the altitude?

3. In a 30-60-90 triangle, the longest leg is $6\sqrt{3}$, what is the length of the shortest leg and the hypotenuse?

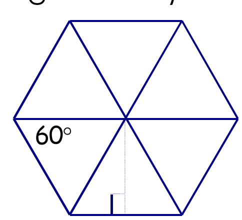
4. A 15 feet ladder is placed against a wall. What is the distance from the ground straight up to the top of the ladder if it creates a 30 degree angle at the top of the ladder?

5. The diagonal of a square is 24 inches long. What is the length of the sides of the square?

6. An isosceles right triangle has a leg of $4\sqrt{2}\ cm$. What is the length of the hypotenuse?

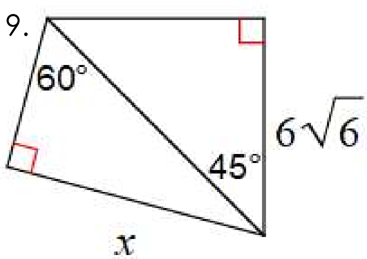
7. In a 30-60-90 triangle, the shortest leg is $9\sqrt{6}$, what is the length of the longest leg and the hypotenuse?

8. Find the area of the regular hexagon that has a side length of 24. (Area of triangle = ½bh)

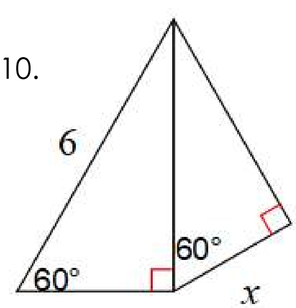


Solve for x.

9.



10.



IV. Radical Operations

1. $\sqrt{27} =$

2. $\sqrt{75} =$

3. $-2\sqrt{72} =$

4. $5\sqrt{144} =$

5. $\sqrt{25n^4} =$

6. $\sqrt{72xy^3} =$

7. $\sqrt{192a^{12}b^5} =$

8. $\sqrt{m^{15}n^4p^{23}} =$

9. $\sqrt{3}\cdot\sqrt{5} =$

10. $\sqrt{6}\cdot\sqrt{6} =$

11. $4\sqrt{2}\cdot 6\sqrt{11} =$

12. $2\sqrt{12}\cdot\sqrt{6} =$

13. $\sqrt{4a^8}\bullet\sqrt{5a^3} =$

14. $2\sqrt{14}\bullet\sqrt{7} =$

15. $5\sqrt{11xy^3}\bullet 2\sqrt{3x^2y^7} =$

16. $-2\sqrt{12}\bullet 5\sqrt{60} =$

17. $\sqrt{\frac{72}{8}} =$

18. $\sqrt{\frac{60}{5}} =$

19. $\frac{9\sqrt{5}}{3\sqrt{2}} =$

20. $\frac{8}{\sqrt{27}} =$

21. $\frac{2\sqrt{2}}{3\sqrt{3}} =$

22. $\frac{\sqrt{8}}{\sqrt{32}} =$

23. $\sqrt{\frac{20}{45}} =$

24. $\frac{2\sqrt{20}}{7\sqrt{45}} =$